Amendments to the Claims

The listing of claims will replace all prior versions and listings of claims in the application.

1. (withdrawn) Human poypeptide designated Cyk-4, which is a GTPase activating protein (GAP) for Rho family of GTPases, with the amino acid sequence as set forth in SEQ ID NO:2 or with the amino acid sequence encoded by a polynucleotide which hybridizes under stringent conditions to a polynucleotide having a nucleotide sequence as set forth in SEQ ID NO:1.

2. (withdrawn) Murine Cyk-4 poypeptide designated Cyk-4, which is a GTPase activating protein (GAP) for Rho family of GTPases, with the amino acid sequence as set forth in SEQ ID NO:4 or with the amino acid sequence encoded by a polynucleotide which hybridizes under stringent conditions to a polynucleotide having a nucleotide sequence as set forth in SEQ ID NO:3.

3. (withdrawn) An isolated DNA molecule comprising a polynucleotide with the nucleotide sequence as set forth in SEQ ID NO:1 encoding human Cyk-4 polypeptide, or an isolated DNA molecule encoding human Cyk-4 polypeptide comprising a polynucleotide which hybridizes under stringent conditions to a polynucleotide having a nucleotide sequence as set forth in SEQ ID NO:1.

4. (withdrawn) An isolated DNA molecule comprising a polynucleotide with the nucleotide sequence as set forth in SEQ ID NO:3 encoding murine Cyk-4 polypeptide, or an isolated DNA molecule encoding murine Cyk-4 polypeptide comprising a polynucleotide which hybridizes under stringent conditions to a polynucleotide having a nucleotide sequence as set forth in SEQ ID NO:3.

5. (withdrawn) An antibody which is specifically reactive with an epitope of the human Cyk-4 polypeptide of claim 1.

6. (withdrawn) An antibody which is specifically reactive with an epitope of the murine Cyk-4 polypeptide of claim 2.

7-11. (cancelled)

12. (withdrawn) A compound identified in the method of any one of claims 7 to 11 for use in cancer therapy.

13-44. (cancelled)

45. (currently amended) A method for determining whether a compound has the potential to inhibit cytokinesis by determining the compound's ability to inhibit the function of a CYK-4 protein or a fragment of the CYK-4 protein to promote GTP hydrolysis by a Rho family GTPase, the method comprising:

(i) incubating the Rho family GTPase with GTP for a period of time sufficient to allow saturation of the Rho family GTPase's GTP binding sites;

(ii) adding the CYK-4 protein or the fragment of the CYK-4 protein to the Rho family GTPase and the GTP in the presence and absence of the compound, wherein the CYK-4 protein or the fragment of the CYK-4 protein comprises a GTPase activating protein domain and, in the absence of the compound, stimulates GTP hydrolysis by the Rho family GTPase; and

(iii) determining an amount of GTP that is hydrolyzed in the presence and absence of the compound;

wherein the compound is determined to have the potential to inhibit cytokinesis if the compound inhibits the CYK-4 stimulated GTP hydrolysis determined in (iii); and

wherein the CYK-4 protein is selected from the group consisting of human CYK-4 (SEQ ID NO:2) [[;]] , a protein with an amino acid sequence encoded by a polynucleotide which hybridizes under stringent conditions to a polynucleotide having a nucleotide sequence as set forth in SEQ ID NO:1 [[;]] , murine CYK-4 (SEQ ID NO:4) [[;]] , and a protein with an amino acid sequence encoded by a polynucleotide which hybridizes under stringent conditions to a polynucleotide having a nucleotide sequence as set forth in SEQ ID NO:3, wherein the stringent conditions comprise (i) overnight incubation at 42 °C in a solution comprising 50% formamide, 5x SSC, wherein 1 x SSC comprises 150 mM NaCl and 15 mM trisodium citrate, 50 mM sodium phosphate, pH 7.6, 5x Denhardt's solution, 10% dextran sulfate, and 20 µg/ml denatured, sheared salmon sperm DNA, followed by (ii) washing in 0.1x SSC at about 65 °C.

46. (previously presented) The method of claim 45, wherein the Rho family GTPase is a full-length Rho family GTPase protein or a fragment of the Rho family GTPase protein that retains GTPase activity.

47. (cancelled)

48. (previously presented) The method of claim 46, wherein the CYK-4 protein is selected from the group consisting of human CYK-4 (SEQ ID NO:2) and a protein with an amino acid sequence encoded by a polynucleotide which hybridizes under stringent conditions to a polynucleotide having a nucleotide sequence as set forth in SEQ ID NO:1.

49. (previously presented) The method of claim 48, wherein the Rho family GTPase is selected from the group consisting of human RhoA, human RhoB, human RhoC, human RAC1, human RAC2, human RAC3, and human GB25.

50. (previously presented) The method of claim 49, wherein the Rho family GTPase is human RhoA.

51. (previously presented) The method of claim 46, wherein the Rho family GTPase is immobilized on a solid support.

52. (previously presented) The method of claim 46, wherein the GTP is labeled.

53. (previously presented) The method of claim 52, wherein the GTP is labeled with a radioisotope or a fluorescent label.

54. (currently amended) A method for determining whether a compound has the potential to inhibit cytokinesis by determining the compound's ability to inhibit the function of a CYK-4 protein or a fragment of the CYK-4 protein to bind to a member of the MKLP1 subfamily of kinesin-like proteins, the method comprising:

(i) incubating the CYK-4 protein or the fragment of the CYK-4 protein for a period of time with the MKLP1 protein subfamily member, in the presence and absence of the compound, wherein the CYK-4 protein or the fragment of the CYK-4 protein comprises a domain that binds MKLP1 subfamily proteins and, in the absence of the compound, binds the MKLP1 protein subfamily member; and

(ii) determining an amount of the MKLP1 protein subfamily member bound to the CYK-4 protein or the fragment of the CYK-4 protein in the presence and absence of the compound;

wherein the compound is determined to have the potential to inhibit cytokinesis if the compound inhibits the binding of the CYK-4 protein or the fragment of the CYK-4 protein to the MKLP1 protein subfamily member as determined in (ii); and

wherein the CYK-4 protein is selected from the group consisting of human CYK-4 (SEQ ID NO:2) [[;]] , a protein with an amino acid sequence encoded by a polynucleotide which hybridizes under stringent conditions to a polynucleotide having a nucleotide sequence as set forth in SEQ ID NO:1 [[;]] , murine CYK-4 (SEQ ID NO:4)

[[;]] , and a protein with an amino acid sequence encoded by a polynucleotide which hybridizes under stringent conditions to a polynucleotide having a nucleotide sequence as set forth in SEQ ID NO:3, wherein the stringent conditions comprise (i) overnight incubation at 42 °C in a solution comprising 50% formamide, 5x SSC, wherein 1 x SSC comprises 150 mM NaCl and 15 mM trisodium citrate, 50 mM sodium phosphate, pH 7.6, 5x Denhardt's solution, 10% dextran sulfate, and 20 μg/ml denatured, sheared salmon sperm DNA, followed by (ii) washing in 0.1x SSC at about 65 °C.

55. (currently amended) The method of claim 54, wherein the MKLP1 protein subfamily member is a full-length MKLP1 protein or a fragment of the MKLP1 protein subfamily member that comprises a domain that binds the CYK-4 protein or the fragment of the CYK-4 protein.

56. (previously presented) The method of claim 55, wherein the MKLP 1 protein subfamily member is selected from the group consisting of CeM03D4.1b (SEQ ID NO:7) and HsMKLP1 (SEQ ID NO:8).

57. (previously presented) The method of claim 56, wherein the MKLP 1 protein subfamily member is HsMKLP1 (SEQ ID NO:8).

58. (cancelled)

59. (previously presented) The method of claim 56, wherein the CYK-4 protein is selected from the group consisting of human CYK-4 (SEQ ID NO:2) and a protein with an amino acid sequence encoded by a polynucleotide which hybridizes under stringent conditions to a polynucleotide having a nucleotide sequence as set forth in SEQ ID NO:1.

60. (previously presented) The method of claim 59, wherein the fragment of the CYK-4 protein comprises amino acid residues 1-120 of human CYK-4 (SEQ ID NO:2).

61. (currently amended) The method of claim 55, wherein the CYK-4 protein or the fragment of the CYK-4 protein is immobilized on a solid support, and wherein the MKLP1 protein subfamily member or the fragment of the MKLP1 protein subfamily member is labeled.

62. (previously presented) The method of claim 61, wherein the label is a radioisotope, a fluorescent label, or a hapten.

63. (previously presented) The method of claim 55, wherein step (i) is performed in solution.

64. (currently amended) A method for determining whether a compound has the potential to inhibit cytokinesis by determining the compound's ability to inhibit CYK-4

function by determining the compound's ability to inhibit self association of a CYK-4 protein or a fragment of the CYK-4 protein, the method comprising:

(i) incubating in the presence and absence of the compound a first CYK-4 protein or a fragment of the first CYK-4 protein with a second CYK-4 protein or a fragment of the second CYK-4 protein, wherein the first CYK-4 protein or the fragment of the first CYK-4 protein and the second CYK-4 protein or the fragment of the second CYK-4 protein each comprises a domain that mediates CYK-4 protein self-association , and, in the absence of the compound, the first CYK-4 protein or the fragment of the first CYK-4 protein binds to the second CYK-4 protein or the fragment of the second CYK-4 protein, and wherein the second CYK-4 protein or the fragment of the second CYK-4 protein is labeled; and

(ii) determining an amount of the second CYK-4 protein or the fragment of the second CYK-4 protein bound to the first CYK-4 protein or the fragment of the first CYK-4 protein;

wherein the compound is determined to have the potential to inhibit cytokinesis if the compound inhibits the binding of the first CYK-4 protein or the fragment of the first CYK-4 protein to the second CYK-4 protein or the fragment of the second CYK-4 protein as determined in (ii); and

wherein the first CYK-4 protein and the second CYK-4 protein are each selected from the group consisting of human CYK-4 (SEQ ID NO:2) [[;]] , a protein with an amino acid sequence encoded by a polynucleotide which hybridizes under stringent conditions to a polynucleotide having a nucleotide sequence as set forth in SEQ ID NO:1 [[;]] , murine CYK-4 (SEQ ID NO:4) [[;]] , and a protein with an amino acid sequence

encoded by a polynucleotide which hybridizes under stringent conditions to a polynucleotide having a nucleotide sequence as set forth in SEQ ID NO:3, wherein the stringent conditions comprise (i) overnight incubation at 42 °C in a solution comprising 50% formamide, 5x SSC, wherein 1 x SSC comprises 150 mM NaCl and 15 mM trisodium citrate, 50 mM sodium phosphate, pH 7.6, 5x Denhardt's solution, 10% dextran sulfate, and 20 µg/ml denatured, sheared salmon sperm DNA, followed by (ii) washing in 0.1x SSC at about 65 °C.

65-66. (cancelled)

67. (previously presented) The method of claim 64, wherein the first CYK-4 protein is selected from the group consisting of human CYK-4 (SEQ ID NO:2) and a protein with an amino acid sequence encoded by a polynucleotide which hybridizes under stringent conditions to a polynucleotide having a nucleotide sequence as set forth in SEQ ID NO:1.

68. (previously presented) The method of claim 67, wherein the fragment of the first CYK-4 protein comprises amino acid residues 1-120 of human CYK-4 (SEQ ID NO:2).

69. (previously presented) The method of claim 68, wherein the fragment of the second CYK-4 protein comprises amino acid residues 1-120 of human CYK-4 (SEQ ID NO:2).

70. (currently amended) The method of claim 64, wherein the first CYK-4 protein or the fragment of the first CYK-4 protein is immobilized on a solid support, and wherein the second CYK-4 protein or the fragment of the second CYK-4 protein is labeled.

71. (currently amended) The method of claim 70, wherein the second CYK-4 protein or the fragment of the second CYK-4 protein is labeled with a radioisotope label, a fluorescent label, a hapten label, a peptide label, or an enzyme label.

72. (currently amended) The method of claim 64, wherein the first CYK-4 protein or the fragment of the first CYK-4 protein is identical to the second CYK-4 protein or the fragment of the second CYK-4 protein.

73. (currently amended) The method of claim 64, wherein the first CYK-4 protein or the fragment of the first CYK-4 protein is different from the second CYK-4 protein or the fragment of the second CYK-4 protein.

74. (withdrawn) A method for identifying a compound having the potential to inhibit cytokinesis by determining the compound's ability to inhibit CYK-4 function by determining the compound's ability to inhibit self association of a member of the MKLP1 subfamily of kinesin-like proteins or a fragment thereof, the method comprising:

(i) incubating in the presence and absence of a test compound a first MKLP1 protein subfamily member or fragment thereof with a second MKLP1 protein subfamily

member or fragment thereof, wherein the first MKLP1 protein subfamily member or fragment thereof and the second MKLP1 protein subfamily member or fragment thereof each comprises a domain that mediates self-association of MKLP1 subfamily proteins, and wherein the second MKLP1 protein subfamily member or fragment thereof is labeled; and

(ii) determining an amount of the second MKLP1 protein subfamily member or fragment thereof bound to the first MKLP1 protein subfamily member or fragment thereof;

wherein the test compound is identified as a compound having the potential to inhibit cytokinesis if the test compound inhibits the binding of the first MKLP1 protein subfamily member or fragment thereof to the second MKLP1 protein subfamily member or fragment thereof as determined in (ii).

75. (withdrawn) The method of claim 74, wherein the first MKLP1 protein subfamily member or fragment thereof is immobilized on a solid support.

76. (withdrawn) The method of claim 74, wherein the second MKLP1 protein subfamily member or fragment thereof is labeled with a radioisotope label, a fluorescent label, a hapten label, a peptide label, or an enzyme label.

77. (withdrawn) The method of claim 74, wherein the first MKLP1 protein subfamily member or fragment thereof is identical to the second MKLP1 protein subfamily member or fragment thereof.